Notice of Allowability	Application No.	Applicant(s)	
	10/667,004	CHAN ET AL.	
	Examiner	Art Unit	
	FRANK W. LU	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the amendments filed on 12/28/2007*.

2. ☒ The allowed claim(s) is/are *claims 1, 3, 4, 6, 8, 10-19, 21-24, and 29-32* .

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 2/2008, 5/2008 and corrected page 3 from 1449 form of 1/2007
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *4/25/2008* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

Reasons for Allowance

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Raj Dave (Reg. No. 42,465) on April 25, 2008.

2. The application has been amended as follows:

In the specification:

Replacing "[T]he present application is a continuation-in-part of pending U.S. Patent Application Serial No. 10/251,152, filed on September 20, 2002" in paragraph [0001] of page 1 of the specification with "[T]he present application is a continuation-in-part of pending U.S. Patent Application Serial No. 10/251,152, filed on September 20, 2002, now US Patent No. 7,361,821 B2".

In the claims:

Cancel claims 2, 5, and 7.

1. (Currently amended) A method comprising:

a) obtaining a plurality of coded probes, each of the coded [probe] probes comprising a probe molecule attached to at least one nano-barcode, and at least two of the coded probes comprise two or more identifiably different nano-barcodes that [create] can generate different detectable signals [signatures] wherein the nano-barcode is selected from the group consisting of carbon nanotubes, fullerenes, submicrometer metallic

barcodes, nanoparticles, quantum dots, combinations thereof, and the nano-barcodes made from nano-tag elements;

b) contacting one or more target molecules in a sample with the coded probes wherein the coded probes comprise oligonucleotides and bind to different locations on the target molecules;

c) ligating the coded probes that are adjacent one another on the target molecules to form ligated coded probes and aligning the ligated coded probes [that bind to the one or more target molecules] on a substrate surface by [microfluidic] molecular combing using microfludic channels and forming organized coded probes wherein the ligated coded probes are aligned in the direction of microfluidic flow in the microfluidic channels;

d) identifying the organized coded probes; and

e) detecting the one or more target molecules based on the [bound] organized coded probes.

3. (Currently Amended) The method of claim 1 [2], wherein the target molecule is a nucleic acid.

4. (Currently Amended) The method of claim 3, further comprising [wherein] contacting a library of coded probes comprising all possible nucleic acid sequences for a particular length of oligonucleotide [is contacted] with the one or more target molecules [molecule].

8. (Currently Amended) The method of claim [7] 3, further comprising separating the ligated coded probes from the nucleic acid and non-ligated coded probes.

10. (Currently Amended) The method of claim 1, wherein the organized coded probes are identified by scanning probe microscopy.

11. (Currently Amended) The method of claim 1, wherein the organized coded probes are identified by an equipment selected from the group consisting of atomic force microscopy, scanning tunneling microscopy, lateral force microscopy, chemical force microscopy, force modulation imaging microscopy, magnetic force microscopy, high frequency magnetic force microscopy, magnetoresistive sensitivity mapping microscopy, electric force microscopy, scanning capacitance microscopy, scanning spreading resistance microscopy, tunneling atomic force microscopy and conductive atomic force microscopy.

12. (Currently Amended) The method of claim 1, wherein the organized coded probes aligned on the substrate surface are identified by scanning probe microscopy.

13. (Currently Amended) The method of claim [12] 3, further comprising determining the sequences of the oligonucleotides that bind to the nucleic acid.

14. (Currently Amended) The method of claim 13, further comprising determining [a] the sequence of the nucleic acid [from] based on the sequences of the oligonucleotides that bind to the nucleic acid.

15. (Currently Amended) The method of claim 3, further comprising identifying the nucleic acid [from] based on the coded probes that bind to the nucleic acid.

16. (Currently Amended) The method of claim 1, wherein the target molecule is a protein, a peptide, a glycoprotein, a lipoprotein, a nucleic acid, a polynucleotide, or an oligonucleotide[, a lipid, a glycolipid or a polysaccharide].

17. (Currently Amended) The method of claim 16, wherein the sample further comprising two or more target molecules [are present in a sample] and [all] the target molecules in the sample are analyzed at the same time.

18. (Currently Amended) The method of claim 16, wherein the sample further comprising two or more target molecules [are present in a sample] and [all] the target molecules of the same type are analyzed at the same time.

19. (Currently amended) A method comprising:

a) obtaining a plurality of coded probes, each of the coded [probe] probes comprising a probe molecule attached to at least one nano-barcode, and at least two of the coded probes comprise two or more identifiably different nano-barcodes that [create] can generate different [signatures] detectable signals wherein the nano-barcode is selected from the group consisting of carbon nanotubes, fullerenes, submicrometer metallic barcodes, nanoparticles, quantum dots, combinations thereof and the nano-barcodes made from nano-tag elements;

b) contacting one or more target molecules with the coded probes[, and] wherein [one or more] the coded probes comprise oligonucleotides and bind to different locations on the target molecules;

c) ligating the coded probes that are adjacent one another on the target molecules to form ligated coded probes and aligning the ligated coded probes [that bind to the one or more target molecules] on a substrate surface by [microfluidic] molecular combing using microfluidic channels and forming aligned coded probes wherein the ligated coded probes are aligned in the direction of microfluidic flow in the microfluidic channels;

d) identifying the aligned coded probes using scanning probe microscopy [to identify the aligned coded probes]; and

e) detecting the one or more target molecules based on the [bound] aligned coded probes.

23. (Currently amended) The method of claim 22, further comprising determining at least part of the sequence of the nucleic acid [from] based on the [bound] aligned coded probes.

24. (Currently amended) The method of claim 19, further comprising separating the bound coded probes from the target molecules after the coded probes are aligned on [a] the substrate surface.

31. (Currently amended) A method comprising:

a) obtaining a plurality of coded probes, each of the coded [probe] probes comprising a probe molecule attached to at least one nano-barcode, and at least two of the coded probes comprise two or more identifiably different nano-barcodes that [create] can generate different [signatures] detectable signals wherein the nano-barcode is selected from the group consisting of carbon nanotubes, fullerenes, submicrometer metallic barcodes, nanoparticles, quantum dots, combinations thereof and the nano-barcodes made from nano-tag elements;

b) contacting one or more target molecules with the coded probes and forming binding complexes wherein the coded probes comprise oligonucleotides;

c) aligning the coded probes of the binding complexes [that bind to the one or more target molecules] on a surface by free flow electrophoresis and forming organized coded probes;

d) identifying the organized coded probes; and

e) detecting the one or more target molecules based on the [bound] organized coded probes.

32. (Currently amended) A method comprising:

a) obtaining a plurality of coded probes, each of the coded [probe] probes comprising a probe molecule attached to at least one nano-barcode, and at least two of the coded probes comprise two or more identifiably different nano-barcodes that [create] can generate different [signatures] detectable signals wherein the nano-barcode is selected from the group consisting of carbon nanotubes, fullerenes, submicrometer metallic barcodes, nanoparticles, quantum dots, combinations thereof and the nano-barcodes made from nano-tag elements;

b) contacting one or more target molecules with the coded probes[, and] wherein [one or more] the coded probes bind to the target molecules and form binding complexes, and wherein the coded probes comprise oligonucleotides;

c) aligning the coded probes of the binding complexes [that bind to the one or more target molecules] on a surface by free flow electrophoresis and forming aligned coded probes;

d) identifying the aligned coded probes using scanning probe microscopy [to identify the aligned coded probes]; and

e) detecting the one or more target molecules [from] based on the aligned [identified] coded probes.

3. The following is an examiner's statement of reasons for allowance:

Claims 1, 3, 4, 6, 8, 10-19, 21-24, and 29-32 are allowable in light of applicant's amendments filed on December 28, 2007, the terminal disclaimers filed on August 13, 2007 and the examiner's amendments. The rejections under 35 U.S.C 112, first and second paragraphs have been withdrawn in view of the examiner's amendments. The examiner's amendments on claims 1, 19, 31, and 32 are supported by original filed claims 2, 5, and 7, Table 1, and pages 26, 27, and 36 of the specification. The closest prior art in the record are Mirkin *et al.,* (US Patent No. 6,361,944 B1, filed on June 25, 1999; US Patent No. 6,984,491 B1, filed on December 7, 2001) and Lieber *et al.,* (US 2002/0146714 A1, priority date: September 11, 2000). These prior art do not teach that step c) of claims 1, 19, 31, and 32. These prior art either alone or in combination with the other art in the record do not teach or reasonably suggest a method which comprises all of the limitations recited in claims 1, 19, 31, and 32.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CAR § 1.6(d)). The CM Fax Center number is (571)273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank Lu, Ph.D., whose telephone number is (571)272-0746. The examiner can normally be reached on Monday-Friday from 9 A.M. to 5 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla, can be reached on (571)272-0735.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

/Frank W Lu /
Primary Examiner, Art Unit 1634
May 1, 2008